

Amendment and Response

Applicant: Xiang Dai et al.

Serial No.: 10/612,663

Filed: July 2, 2003

Docket No.: 200308566-1

Title: SUPPORTING A CIRCUIT PACKAGE INCLUDING A SUBSTRATE HAVING A SOLDER COLUMN ARRAY

REMARKS

The following remarks are made in response to the Office Action mailed February 23, 2007, in which claims 8, 10, 13-14, 21, 23, 25, and 32-35 were allowed and claims 28-31 were rejected. With this Response, claim 28 has been amended. Claims 8, 10, 13-14, 21, 23, 25, and 28-35 remain pending in the application and are presented for reconsideration and allowance.

Claim Rejections under 35 U.S.C. § 112

In the Office Action, claims 28-31 are rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the enablement requirement.

Applicants respectfully submit that the specification, along with the drawings, provide more than adequate support to enable one skilled in the art to make and/or use the invention, as several terms in claim 28, along with the specification and the drawings, explain and illustrate the relationship between the supports and the band.

First, Applicants' amended independent claim 28 recites an assembled electronic component system and includes the limitation that supports that are separate and distinct from each other, and spaced apart from each other. However, Applicants' claim 28 does not include the limitation that the supports are connected to each other. Moreover, Applicants' independent claim 28 also includes the limitation that a single band, that is separate and distinct from the respective supports, is sized and shaped to surround and contact all of the respective supports . . . to removably secure the respective supports in position underneath the extended portion of the lid of the integrated circuit package (and to maintain the respective supports in position relative to the printed circuit board). Accordingly, Applicants' claim 28 directly indicates that the band is separate and distinct from the supports.

As further explained below, the limitations of Applicants' independent claim 28 are supported at page 8, lines 7-19 of Applicants' specification and Figure 6, as well as other portions of Applicant's specification, teach one skilled in the art how to insert and position supports underneath a lid of the integrated circuit package.

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Foremost, Figure 6 provides a picture of how each support is separate and distinct from each other while band 80, which is separate and distinct from the supports 70, extends about the supports 70 to hold supports 70 in place underneath lid 16 of integrated circuit package 14. One skilled in the art in viewing Figure 6 would see and understand that band 80 merely holds the supports 70 in place and does not form a part of, and/or is not integrated with, supports 70 (as asserted in the foot note of the Office Action).

In addition, it is understood from the embodiment of supports 40 (described at pages 4-7 of the specification and illustrated in Figures 2-5) that supports 40 are held in place underneath the lid 16 and onto the printed circuit board 12 via fasteners 52. The fasteners 52 (as shown in Figures 2-5) hold the supports 40 in place underneath the lid 16 of the integrated circuit package 14 until the lid 16 of the integrated circuit package 14 presses down onto the supports 40 after the solder column array 30 is reduced in height (due to creep caused by the compressive load).

An alternate embodiment, corresponding to Applicants' independent claim 28, is introduced in association with Figure 6 to provide a band 80 to hold supports 70 in place relative to the lid 16 of the integrated circuit package 14. In other words, the alternate embodiment of the band 80, is not unrelated to the prior embodiment of supports 40 and fasteners 52 illustrated in Figures 2-5, but merely represents an alternative fastening mechanism that also holds the supports 70 in place until the compressive force results in the lid 16 of integrated circuit package 14 applying a vertical force on supports 70. Accordingly, one skilled in the art would recognize that the band 80 is not part of, nor integral with, the supports 70 but that the band 80 is an element separate from supports 70 and that band 80 merely holds the supports 70 in place underneath lid 16 of integrated circuit package 14.

Moreover, limitations within Applicants' independent claim 28 provide further instruction to one skilled in the art on how to make and/or use the invention. In particular, one limitation in claim 28 that "the single band is sized and shaped . . . to contact all of the respective supports" in Applicants' independent claim 28 directly indicates that the band 80 is an item separate from the supports with the band being located in a position directly against and touching the supports, but distinct from the supports. In addition, one limitation in claim 28 that the band "appl[ies] a lateral force . . . to removably secure the respective supports in

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position underneath the lid” indicates that the band 80 is an element separate and distinct from the supports because the band holds the supports in place.

Finally, Applicants respectfully submit that the Examiner’s statement in the footnote of the Office Action regarding the Cromwell U.S. Patent 6,198,630 (the Cromwell Patent) is misplaced, as the band 80 as shown in Figure 6 of Applicants’ drawings clearly could not provide the function of the Faraday cage 117 described and illustrated in the Cromwell Patent to provide protection against electromagnetic interference because band 80, as shown in Figure 6 does not seal integrated circuit package 14 from the environment. Accordingly, for the extensive reasons previously presented in Applicants’ Response mailed on January 2, 2007, the electromagnetic interference frame 110 of the Cromwell Patent teaches away from Applicants’ amended independent claim 28, which includes the limitation that the supports are separate and distinct from each other, and spaced apart from each other and the limitation that a band is separate and distinct from the supports.

Accordingly, based upon Applicants’ specification, drawings, and claims, when considered in the context of the cited references and the level of skill of one skilled in the art as described above, Applicants’ respectfully submit that Applicants’ specification and drawings enables one skilled in the art how to make and/or use the assembled electronic component system of Applicants’ independent claim 28. Applicants therefore respectfully request withdrawal of the rejection under 35 U.S.C. § 112 and allowance of claim 28, along with claims 29-31 depending therefrom.

Allowable Subject Matter

Applicants’ acknowledge the allowance of claims 8, 10, 13-14, 21, 23, 25, and 32-35.

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CONCLUSION

In view of the above, Applicant respectfully submits that claims 28-31 along with allowed claims 8, 10, 13-14, 21, 23, 25, and 32-35 are in form for allowance and are not taught or suggested by the cited references. Therefore, reconsideration and withdrawal of the rejections and formal allowance of pending claims 8, 10, 13-14, 21, 23, 25, 28-31, and 32-35 is respectfully requested.

No fees are required under 37 C.F.R. 1.16(h)(i). However, if such fees are required, the Patent Office is hereby authorized to charge Deposit Account No. 08-2025.

The Examiner is invited to contact the Applicant's representative at the below-listed telephone numbers to facilitate prosecution of this application.

Any inquiry regarding this Amendment and Response should be directed to either David A. Plettner at Telephone No. (408) 447-3013, Facsimile No. (408) 447-0854 or Paul S. Grunzweig at Telephone No. (612) 767-2504, Facsimile No. (612) 573-2000. In addition, all correspondence should continue to be directed to the following address:

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Respectfully submitted,

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